

WHAT IS CLAIMED IS:

1. An air conditioner for a vehicle comprising:

a cooling device for cooling air;

a heating device provided downstream of the cooling device for heating air;

an air mix door for adjusting a ratio of a volume of air to be heated by the heating device to a volume of cooled air that is cooled by the cooling device and bypasses the heating device, thereby controlling a temperature of air to be blown into a passenger compartment of the vehicle;

a unit case housing the cooling device, the heating device and the air mix door, wherein the unit case defines a first opening through which air to be blown toward an upper region of the passenger compartment flows and a second opening through which air to be blown toward a lower region of the passenger compartment flows; and

a switching door rotatably supported in the unit case for opening and closing a first passage communicating with the first opening and a second passage communicating with the second opening, wherein

the switching door includes a guide plate that is rotatable with the switching door, and

the guide plate is disposed to direct heated air, which is heated by the heating device, such that the heated air merges with the cooled air flowing in the first passage when the switching door opens the first passage and closes the second passage and to direct the cooled air such that the cooled air merges with the heated air flowing in the second passage when the switching door closes the

first passage and opens the second passage.

2. The air conditioner according to claim 1, wherein the switching door is disposed such that the guide plate opens and closes at least a part of the second opening.

3. The air conditioner according to claim 1, wherein the guide plate has an arc shape along a circumference of rotation.

4. The air conditioner according to claim 1, wherein the switching door has side walls extending from ends of the guide plate to a rotation axis of the switching door so that the switching door forms a substantially U-shaped opening,

when the switching door closes the second passage the heated air flows through the U-shaped opening, and when the switching door closes the first passage the cooled air flows through the U-shaped opening.

5. The air conditioner according to claim 1, further comprising: a defrost/face door supported in the unit case,

wherein the first opening includes a face opening through which air to be blown toward an upper half body of a passenger flows and a defrost opening through which air to be blown toward a windshield of the vehicle flows, and the defrost/face door is disposed to move for opening and closing the defrost opening and the face opening.

6. An air conditioner for a vehicle comprising:

a cooling device for cooling air;

a heating device provided downstream of the cooling device for heating air;

an air mix door for adjusting a ratio of a volume of air to be heated by the heating device to a volume of cooled air that is cooled by the cooling device and bypasses the heating device, thereby controlling a temperature of air to be blown into a passenger compartment of the vehicle;

a unit case housing the cooling device, the heating device and the air mix door, wherein the unit case defines a first opening through which air to be blown toward an upper region of the passenger compartment flows and a second opening through which air to be blown toward a lower region of the passenger compartment flows; and

a switching door rotatably supported in the unit case for opening and closing a first passage communicating with the first opening and a second passage communicating with the second opening, wherein

the switching door includes a guide plate that is rotatable with the switching door, and

the guide plate is disposed to direct the cooled air such that the cooled air merges with heated air, which is heated by the heating device and flows in the first passage, when the switching door opens the first passage and closes the second passage and to direct the heated air such that the heated air merges with the cooled air flowing in the second passage when the switching door closes the first passage and opens the second passage.

7. The air conditioner according to claim 6, wherein the guide plate has an arc shape along a circumference of rotation.

8. The air conditioner according to claim 6, further comprising:
a defrost/face opening supported in the unit case,
wherein the first opening includes a face opening through which air to be blown toward an upper half body of a passenger flows and a defrost opening through which air to be blown toward a windshield of the vehicle flows, and the defrost/face is disposed to move for opening and closing the defrost opening and the face opening.

9. The air conditioner according to claim 6, wherein
the switching door has and side walls extending from ends of the guide plate to a rotation axis of the switching door so that the switching door forms a substantially U-shaped opening,
when the switching door closes the second passage the cooled air flows through the U-shaped opening, and when the switching door closes the first passage the heated air flows through the U-shaped opening.